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ABSTRACT

This report describes a survey conducted in 1979 to determine user response to SCORPIO, part of the Library of Congress Information System (LOCIS) consisting of online catalogs that are used directly by the public and are integrated with regular reference services. A questionnaire distributed to 123 users of this system asked about types of users, frequency of use, waiting time, instructional methods, information desired, access points used, and the computer versus the card catalog. The results showed an overall positive reaction to the system. Only six percent of the users felt it was hard to learn, although 85 percent wanted more training and documentation. Most users learned from librarians or printed flip-charts; for future improvements, online or computer-assisted instruction was preferred over audiovisual or group instruction. Three-quarters of all users performed subject searches, a finding that contrasts with other catalog use studies. A list of nine references and a copy of the questionnaire including the raw data are provided. (Author/FM)

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SCORPIO: A STUDY OF PUBLIC USERS OF THE LIBRARY OF CONGRESS INFORMATION SYSTEM

by

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As library catalogs have grown and changed, new forms of catalogs are being tested and evaluated. COM, online, and computer-produced book catalogs are affecting library use and services, and we need to find the best ways to integrate these catalogs into the reference environment and to identify the users' reactions to them. The Library of Congress has an online catalog which is used directly by the public throughout the reading rooms and which provides full author, title, and subject access to the MARC file and to selected in-house data bases. This article describes a preliminary study which was made of SCORPIO, a segment of the developing Library of Congress Information System (LOCIS) and which may contribute to the understanding and development of online catalogs.

The SCORPIO system

The beginnings of the SCORPIO system (Subject-Content Oriented Retriever for Processing Information Online) date from the late 1960's, when the Library's Congressional Research Service (CRS) began developing an online information retrieval system furnishing legislative and bibliographic data. The Bill Digest file (CG series) and the Bibliographic Citation file (BIBL/CITN) were available online to CRS staff members by 1969. The SCORPIO system at the Library of Congress was an outgrowth of the "non-unique key retriever" capability which was developed for CRS about 1972. The structure of the SCORPIO/Logic Library System is technically based on work which originated in the middle 1960's at Lockheed under sponsorship of the National Aeronautics and Space Administration under the names "Dialog" and "Recon." The full SCORPIO programs, created by the Library's Information Systems Office (now the Automated Systems Office, ASO), were in use in a few Congressional offices by 1974, with the addition of the National Referral Center file (NRCM) and CRS's Issue Briefs (ISSU). In April, 1975, the first computer terminal for public use was installed in the Science

Reading Room, providing access to the National Referral Center file (NRCM, a directory of organizations) and to the Selected Science and Technology data base: 90,000 English-language monographs in LC classes, Q, R, S, and T selected from the MARC tapes. Without any special announcements or training, the system was set up to test the software, hardware, and public acceptance.

SCORPIO evolved, based on feedback from this successful experiment and from LC and Congressional staff, and in May, 1977, the Computer Catalog Center (CCC) was opened adjacent to the Main Reading Room. Located in the CCC were six Sycor CRT terminals, two with Tally local printers attached. Brief printed instructions were available, and a reference librarian was on duty to assist users with the system. There are currently a total of twelve terminals and four printers for public use in the Main Reading Room area, and about fifteen public terminals scattered throughout other reading rooms. Considerable expansion in public terminals is planned in 1981. The Library's computer systems support over 1500 terminals for reference, processing, and administrative use (including terminals in Congressional offices).

"SCORPIO" refers to a retrieval language with consistent command and display techniques across the different files in this portion of the LOCIS. Access points usually include authors or other personal names, titles, corporate names, subject terms, and identifying numbers such as LC card number or other accession number. Searchers may browse through dictionary indexes of these access points, and then create as many stored sets as desired. Sets may be operated upon with Boolean logic, or limited by various elements in the record such as language or date. Entries may be displayed in full or abbreviated formats. Patrons use the system directly, without a librarian as intermediary except for initial instruction or ready-reference checks. While off-line prints

line prints cannot be generated for public users of SCOPRIO, those users may print at no charge on local terminal printers.

Library users have free access to the following files: 1) Library of Congress Computerized Catalog (LCCC), allowing searches by author, title, LC subject heading, class number, and card number of the entire MARC monographs data base; 2) National Referral Center file (NRCM), serving as a directory of organizations which offer information resources in science, technology, and social science; and 3) a series of files produced by the General Accounting Office based on the three-volume Congressional Sourcebook series. The public has limited access to certain CRS files which are in the public domain, providing legislative and public policy information. The most heavily used file is the LCCC, which represents 80% of the use on public terminals, and 40% of overall SCORPIO use. As a whole, the LOCIS includes MUMS (Multiple-Use MARC System) and several other administrative and information retrieval subsystems. The only portions of the system involved in this study were the publicly available SCORPIO databases mentioned above.

When this study was first conceived, the CCC had been in operation for a year and no formal evaluation had taken place. Although we were serving 40 to 50 users who were performing about 200 searches each day, judging from cursory reference and automation statistics, there were many questions to be answered. We needed to know who our users were, what approaches they were taking to SCORPIO, how effective our instructional methods were, and how the online catalog compared with the card catalog. We also needed to assess the adequacy of our hardware and software. Some specific data were available from ASO as to the number of transactions per day per terminal and which files were accesed, but some kind of user survey was necessary to get a fuller picture of public usage.

Survey development

A literature search revealed an interesting gap: between the great body of information on card catalog use, and on the use of online information retrieval services, there was no published work on direct (i.e. not via an intermediary) use of an online catalog. Nevertheless, the techniques of both types of studies were pertinent to the SCORPIO survey. A state-of-the-art review by Ruth Hafter (1) of catalog research appeared in late 1979, and she also observed the lack of information noted here. Although problems in locating entries and understanding bibliographic data are encountered in online as well as card catalogs, some considerations of card catalog studies were inapplicable, such as economic ones. Since there is no charge to users for SCORPIO use, and since all the data have been entered, there was no pressure to determine the minimum number of fields one would have to convert, or the most time-saving methods of searching the file. The common measures of precision and recall for information retrieval evaluation were also not immediately helpful; it was not possible to construct an experimental file of known items to test recall, and assessing the indexing precision of existing LC subject headings would be too large a task to undertake at this stage. User effort as a measure is relevant and has been indirectly incorporated into the survey.

At the time of this initial research, some information was available on the online plans of various libraries (2), and since then many other reports have appeared, for example in the Alternative Catalog Newsletter; there is still almost no user evaluation of these systems. The most applicable work was that done at the University of Toronto Robards Library and at the Ohio State University Library. In the process of closing its catalog, Toronto had briefly experimented with an online catalog and had surveyed its users before settling

on a final COM catalog. OSU had taken its circulation system, the Library Control System (LCS), and was modifying it to function as an online public catalog. Reports of both these projects were examined (3), and the author visited OSU to observe its terminal configuration and system operation. Particularly interesting were the preliminary results of a survey conducted at OSU. A questionnaire was administered to 304 users of the LCS over three academic quarters. For example, students were asked why they used terminals, how long they had known about the system, how they had learned to use it, what kind of searches they performed, and so forth. Most respondents learned from library staff or a printed handout, and the vast majority found it easy to use even though few had used any other terminal system previously. Although 60% of the respondents preferred using LCS to the card catalog, only 32% felt it could replace the card catalog. The LCS was more limited at that time than SCORPIO, not providing subject access, but the kinds of questions being asked directly paralleled much of what we wanted to know about SCORPIO.

Scattered statistics and studies from within LC were pulled together to provide background for the survey. Studies of SCORPIO had been undertaken by CRS as part of broader evaluations of its total information service (4). A few articles about SCORPIO have appeared in the library literature, but these have concentrated on its role in providing information to the Congress and on technical aspects of the system design (5). Other supporting reports included a brief assessment of the Science Reading Room terminal experiment, based on user comments in a log-book and machine-generated tallies of searches (6); forecasts of automated catalog development at LC (7); portions of a general reader survey carried out in April 1976 by the Librarian's Task Force on Goals, Organization, and Planning (8); proposed policy statements on public terminal use

from an interdepartmental commiteee convened shortly after the CCC first opened. These, together with an early plan for a user survey that had not been implemented, all stressed the need for more detailed evaluation.

Various statistics on SCORPIO services were available. CCC staff kept records of the number of questions they were asked, reflecting only staff interactions and not the actual number of terminal users. ASO produced machine-generated tallies of the total number of transactions per file, the number of commands and errors made (an average of 15 commands and .62 errors per search), and the average length of searches (11-15 minutes). However, one user may make several searches at one sitting, and ASO figures did not give information on how people were using SCORPIO, what they were finding and not finding, and which steps in the search procedure caused problems.

The preliminary proposal for the survey was submitted with the intent to survey both users and non-users in all areas where public terminals were located. Since specific performance criteria did not exist for SCORPIO public services, or other similar online catalogs, the project would not constitute an evaluation in the strictest sense, but rather an informal attempt to characterize the users and determine their understanding of and problems with the system. This pilot study could point the way toward a more comprehensive investigation.

Methodology

The development of the survey instrument and sampling methodology presumed that this would not be a highly-controlled experimental situation, but a loosely-defined population being examined amidst many constraints on the survey process. The final questionnaire comprised 38 questions, 36 of which were some form of closed-end, multiple-choice question. The questionnnaire was printed as

printed as a twelve-page booklet, including a back page for user comments. A statistical consultant advised on the questionnaire construction and sampling technique. A copy of the questionnaire, indicating the responses, follows this paper.

It was difficult to decide on an effective method of distribution because of the physical arrangement of the terminals and the staffing patterns in the reading rooms. Both the terminals and the card catalog stretch across three rooms with several entrances, and reference staff rotate during the day among four different stations. It was not possible to control many different areas at once or to canvass the rooms to identify recipients of the non-user survey. Consequently, although alternative methods were considered, the non-user portion of the survey was postponed until a full test had been made of the user questionnaire and survey methods.

Since users are not required to sign in at the CCC, we did not have an exact count of the population; however, we did have the reference and ASO statistics mentioned earlier. Using these for the same month one year prior to the planned test period, we estimated the number of persons who might use the CCC during any one day or series of days. The availability of these statistics, and the layout of the CCC, where users must pass the librarian's desk on their way to a terminal, led us to further restrict this phase of the survey to the six terminals in that area. We decided to sample rather than survey the entire population, and to distribute the questionnaire at specified but varying times of day for two weeks, causing as little disruption as possible to users and to reference staff.

Survey implementation

The survey test period was from May 14 through May 27, 1979, including

evenings and weekends. The sampling schedule broke the day (8:30 a.m. to 9:30 p.m.) into nine periods of one or one and a half hours. Questionnaires were distributed every third period, changing the pattern of distribution each day. To determine the total population, a roster was kept at the librarian's desk at the CCC with pages corresponding to the sampling periods. All arriving users signed in on numbered lines; if they came during a survey period, they were handed a questionnaire coded to the roster page, implicitly representing the time and date. Users who first signed in during a non-survey period and then either stayed through or later returned during a survey period were not given questionnaires; each user had only one chance to be surveyed during the two-week period. This method placed the emphasis on the number of persons and not the number of machine transactions; it also did not give heavier weight to those who used SCORPIO more often. Although we expected concern about the respondents' anonymity since the questionnaires were linked to the rosters, there were no complaints during the course of the survey.

The final sample numbered 148, which was about 30% of the total two-week CCC population of 493. 123 questionnaires were returned, giving a return rate of 85%. Users were asked to return the form to the librarian at the CCC, and most tended to fill it out as they searched. Postage-free mailing labels were provided for those who could not complete the questionnaire on the spot. The roster was checked off as the surveys came in, and some telephone follow-ups were made to request that questionnaires be returned.

Data analysis

As the answers were coded, errors, omissions, and misinterpretations were noted for future revision of the questionnaire. No questionnaires were totally rejected, although specific answers were occasionally invalidated.

Written comments were transcribed and sorted into categories. The data were keypunched in a fixed format, and a simple Statistical Package for the Social Sciences (SPSS) program was used to compute the frequencies and to cross-tabulate some of the questions.

Based on the number of questionnaires returned and the percentage of the users represented thereby, a rough calculation was made of an overall sampling error of ±6.6%, with a confidence interval of 95%. This assumes a completely random sample; for the "clustering" technique used in this survey a complicated and precise error formula was derived and could be used in a more extensive study. The sampling error present in cross-tabulations, where a smaller number of cases are being examined, is much higher. There is also an unknown amount of error resulting from the questionnaire content and its administration. These considerations limit any inferences drawn from the surevey results.

Results

The survey showed that users like SCORPIO and hope it will do more for them in the future. Despite variances and biases of the survey, it at least helps us understand our public. Grouping the questions into related areas provides analyses of 1) general population characteristics, 2) the SCORPIO user environment at LC, 3) instructional effectiveness, and 4) purposes and comparisons of SCORPIO and card catalog usage. Percentages quoted represent the proportion of the total number of cases (i.e., the percent of 123), not of the total number of responses to any one question (which may number less than 123); figures do not always add to 100% because of non-responses or situations where users could pick more than one answer.

1) Population characteristics

One quarter of the respondents were at LC for the first time, as opposed to those who use LC several times a week (21%), several times a month (23%), or only occasionally (30%). When asked about SCORPIO use, 43% indicated they had just learned to use it and 48% had been using it for one to four months or longer. The sample was thus roughly divided in half between new and experienced users of the computer system. From the list of possible affiliations, the two categories most often checked were students, either undergraduate or graduate/professional school (20% each). The other significant grouping with three categories representing the general adult public: author/private researcher, doing professional or work-related research, and doing personal or non-work research (about 14 people each). Other users included faculty, Congressional and LC staff, and federal government employees. Two-thirds of the users were from the Washington metropolitan area. Although respondents were asked to write in the subject of their research, this was not coded because of the inconsistency of the types of answers given.

Most users (64%) found out about SCORPIO simply by seeing it in the Library; 25% heard about it from a friend or colleague. Only nine people had been referred by a librarian at LC. A fourth of the respondents had previously used other information retrieval systems. Among experienced users, eight people used terminals at least once a day, 12 at least once a week, and 19 at least once a month. About 24% used terminals infrequently or sporadically. In relation to demand for printers, perceived by reference staff to be quite high, only ten people indicated that they used printers every time they used SCORPIO. Another 30% used printers often or sometimes; 22% had never used a printer and the remainder were new to the system.

2) SCORPIO user environment

Indicating all the terminal locations they preferred, 22% of the respondents checked the CCC as the spot they usually went to for terminals. Thirty-four percent (the largest single group) said they used terminals wherever it was convenient for their work.

Only 11 respondents said that they had had to wait to use a terminal on the day of the survey; of those, nine waited less than five minutes. However, only 20 users had never had to wait for a terminal, and 70% of those who were not new users had had to wait sometimes. Of those who used printers on the day of the survey, 65% did not have to wait. Comparable to straight terminal use, about 62% of printer users had to wait sometimes, and only 16% had never had to wait. The question on queuing did not distinguish among different library locations; however, when asked where they would like to see more terminals installed, 37% (a plurality) said that more were needed but that it didn't matter where.

In an effort to equalize access for all users, different time limits for SCORPIO use were proposed on the questionnaire. While 35% of the respondents favored a flat 30-minute limit on terminal use, 42% favored having a five-minute "express" terminal and other terminals with a 30 or 45 minute limit. For printers, a 15-minute and a 30-minute limit were each preferred by about 30% of the users, as opposed to a limit based on the number of pages or citations printed. Only 5 users felt there should be no limits at all. At present there is an informal 30-minute limit on SCORPIO use, which may be extended if no one else is waiting. Some users will search different topics for an hour or longer. Time limits may be necessary in the future, and the users appear to support this.

3) Instructional effectiveness

Several approaches to user education have coexisted at the CCC and in other reading rooms: one-to-one instruction, flip-charts, brief cards, and wall posters. In some cases special sessions are arranged for small groups, and audio-visual materials have also been proposed. Congressional and LC staff receive training separately from the public.

Roughly half of the respondents first learned to use SCORPIO from a librarian at the CCC. Another 25% said they used the flip-chart beside the terminal, but as this chart is also used by librarians in demonstrating to users, a portion of that 25% could have been working with reference staff and not exclusively with the chart. Other sources of instruction, including friends, brief cards, in-house training, and non-CCC librarians, did not represent very large numbers of users. When asked whether it was easy or hard to learn to use SCORPIO, only seven people checked hard. Fifty-seven percent checked easy, and 37% felt it was neither hard nor easy. Among new or experienced users, or different categories of users, there was little variation in this opinion. Despite these encouraging answers, 85% of all respondents felt they could benefit from additional training or written material.

Considering a list of factors involved in using SCORPIO, respondents rated each as easy, medium, or hard to learn. Deciding which command to use, and inserting correct spacing and punctuation caused the fewest problems, with 65 to 68% of users rating these easy. To get the correct order and format of commands and to understand the printed instructions was considered easy by 50 to 55% and medium by 35 to 39%. Although specifying subject headings and understanding computer messages also received about a 50% easy rating, these two had noticeably higher hard ratings (12%) than the other factors noted above. By far the most

difficult factor was "figuring out what to do when problems occur"; only 17% rated this easy, 37% medium, and 41% hard. Gaps in instructional materials and ambiguous system messages both contribute to this frustration. There is not at present a "help" feature on SCORPIO that aids the user in going to the next step.

Another question listed options that could improve instruction, with choices of yes, no, or maybe for each. The strongest preference (64%) was for computer-assisted or online instruction; 61% answered yes for take-home manuals, and 57% felt more complete instructions and messages displayed by SCORPIO would have helped. The least favored option was group instruction, which 58% felt would not have helped; only 16 people checked yes. Users showed no marked feeling on having more assistance from library staff, and only a slightly more positive reaction to having more detailed manuals beside the terminals (48% yes, 25% maybe, 20% no). The idea of slide shows or other audio-visual media was also received rather ambivalently. Choices in this question were not much affected by the way in which users had first learned, except that those who learned from a friend had a predictably greater desire for more help.

Assessing the effect of physical features of SCORPIO hardware showed that users have very little difficulty with the Sycor terminals and Tally printers most commonly found in reading rooms. Among factors such as keyboard layout, screen brightness, character size, and printer operation, the latter was the only one that caused problems. The procedure for resetting the printer margins, which must be followed every time the computer has been "down" or the terminal power turned off, is confusing. One exception to the general ease of operating terminals was in understanding the function of some switches and keys; 37% of the users felt this was hard, three times as many as for any other factor.

Many control buttons are in fact not ever used in searching by the general public, but their presence may be disconcerting.

With many automated literature searching systems, users are required to reserve and pay for services. Although this is not true at LC now, further demands on and expansions of computer services might necessitate a consideration of such policies. When asked whether it would help to reserve facilities, users were not certain: for SCORPIO instruction, 38% said no, 42% yes; for terminal use, 42% said no, 42% yes; for printer use, 37% said no, 45% yes; for consulting with a librarian who would do the search for the user, 48% no and 36% yes. Long-term users were more willing to reserve for instruction, but not to use terminals or printers, and were more strongly against having staff search for them. These answers, together with the preferences for instructional methods, reflect a "hands off" attitude among the respondents, who seem to desire self-sufficiency and to want to avoid dependency on the library staff.

The responses were only slightly more definite on the question of paying for services. Although actual fees were not quoted, users indicated a willingness to pay for offline prints (58% yes, 30% no) and local terminal printing (56% yes, 34% no). Those who used the printers most often were not necessarily more willing to pay. Respondents were evenly split on the question of paying to have librarians do searches or of purchasing instructional manuals, even though they want more of such manuals. Patrons who had experience with other information retrieval systems were more likely to accept paying a librarian to do searches, but otherwise their use patterns were not significantly different. One user wrote that requiring reservations could lead to problems with "no-shows," uneven scheduling, and discrimination against

new and/or hurried users. Another "taxpayer" added that as many services as possible should be charged for on an individual basis.

4) Access points: SCORPIO and the card catalog

The last portion of the questionnaire inquired into purposes for and approaches to SCORPIO and card catalog usage. The most frequent general purpose for using SCORPIO was "to scan the available literature," an option circled by 53% of the respondents. "Preparing an extensive bibliography" and "selecting a few good items" were each circled by about 27% of the users, who could choose as many options as were applicable. Other uses included checking legislative information or just familiarizing oneself with the system. In identifying more precisely the types of information sought, we found the outstanding category, circled by 76% of the respondents, to be "what books LC has on a particular subject." Even graduate students and faculty showed this high percentage of subject searching, which contrasts with findings from other catalog use studies (see table). LC's closed stacks may account for part of this, as researchers must do their browsing through catalogs and not proceed directly to the shelves. Other factors might be the novelty of SCORPIO and the expectation that a large research facility like LC might have items unknown to a patron. The next largest categories were searching by author, circled by 37%, and checking call numbers for specific items (33%). After the projected freezing of the card catalog we expect to have heavy demand for quick call-number identification, especially once we are fully dependent on the LOCIS and have no manual backup such as the planned "add-on" card catalog.

In their most recent search on SCORPIO, 23% of the people had used personal names as an access point, 27% used titles, and 69% used subjects. Of those who used subjects, 73% browsed randomly under some word, 5% consulted

CROSS-TABULATION OF QUESTION 12, TYPE OF USER, BY QUESTIONS 28 AND 29, TYPES AND PURPOSES OF SEARCHES

Search type ↓ / Category →	Undergrad	PostGrad	Faculty	Congr.	Govt	LC	Priv. res.	Work rel.	Personal	TOTAL
28-1, extens. bibliog.	12 (48%)	9 37.5%	3 37.5%	1 25%	4 36.3%	0	3 18.7%	1 6%	1 7.6%	34
28-2, select few items	7 28%	5 20.8%	2 25%	0	2 18.1%	3 75%	5 31.2%	3 20%	7 53.8%	34
28-3, scan literature	15 60%	15 62.5%	5 62.5%	3 75%	5 45.4%	1 25%	9 56.2%	6 40%	4 30.7%	63
28-4, check facts	6 24%	3 12.5%	0	0	1 9%	0	1 6%	5 33%	2 15.3%	18
28-5, other	1 4%	2 8.3%	1 12.5%	0	3 27.2%	0	4 25%	1 6%	3 23%	15
29-1, books by author	10 40%	10 41.6%	5 62.5%	3 75%	1 9%	1 25%	7 43.7%	4 26.6%	3 23%	44
29-2, books by subject	19 76%	21 87.5%	7 87.5%	4 100%	7 63.6%	3 75%	12 75%	8 53.3%	10 76.9%	91
29-3, pdcl. articles	10 40%	10 41.6	2 25%	3 75%	1 9%	0	6 37.5%	1 6%	1 7.6%	34
29-4, identify names	6 24%	7 29.1	2 25%	2 50%	2 18.1%	1 25%	4 25%	3 20%	2 15.3%	29
29-5, books by title	5 20%	11 45.8	4 50%	1 25%	3 27.2%	1 25%	5 31.2%	3 20%	2 15.3%	35
29-6, identify call numbers	10 40%	7 29.1	4 50%	2 50%	3 27.2%	2 50%	6 37.5%	2 13.3%	2 15.3%	38
29-7, legisl. info	6 24%	6 25%	1 12.5%	3 75%	1 9%	0	3 18.7%	3 20%	0	23
29-8, names of orgs.	5 20%	2 8.3%	0	3 75%	1 9%	0	3 18.7%	2 13.3%	0	16
TOTAL PERSONS IN CATEGORY	25	24	8	4	11	4	16	15	13	120

(Percentages are by column, i.e., the percentage of that category of person. For row percentages, see main questionnaire results.)

the LC Subject Headings list which is kept near the terminals and catalogs, and 11% used LC classification numbers. Difficulty in making effective use of subject headings was noted earlier as a problem. Although this is not unique to automated systems, it requires more attention in SCORPIO than in the card catalog since subject authority records are not yet online to the public. The lack of a cross-reference structure may go unnoticed as users browse unused terms or perhaps find only title entries.

SCORPIO displays records in card (or accession) number order, not alphabetically. Eighty-three percent of the users felt this was satisfactory. When asked to consider other sort options, there was a slight preference for reverse chronological order, rated as better by 31% of the respondents. Alphabetical order by title was rated as better by 15% and as the same by 46%; alphabetical by author was rated as better by 22% and as the same by 43%. One user suggested a capability for choosing any sort order appropriate, and a Library committee is currently studying this possibility.

Users who could not find what they wanted after an initial SCORPIO search took different steps. The two most popular alternatives of those listed in the question were trying a different search term on SCORPIO and going to the card catalog, each chosen by about half of the survey population. Consulting the librarian on duty at the CCC was chosen by 28%, and 25% went to printed indexes and bibliographies. Trying another data base was considered by 20% of the users. Users could check as many steps as they wanted, although there was no way for them to indicate the order in which these steps might be taken.

Analyzing the approaches patrons take to SCORPIO and the card catalog is affected by the coverage of the two tools. Thirty-seven percent of the

respondents were looking for materials published after 1969, the approximate cut-off date for inclusion in the LCCC. Only 12 people were interested exclusively in items published before 1969 (most such users would not have been in the survey population), and 51% were using materials covering all dates. About half the respondents had used the card catalog in addition to SCORPIO on the day of the survey. Of those who used the cards, 62% were looking by subject, 50% by author, and 40% by title. One-third of the users who only need post-1969 materials used the card catalog even though they were also using SCORPIO.

The questionnaire attempted to compare the ease of certain search operations between SCORPIO and the card catalog. Many people left the rather long question blank, or misunderstood it, so the data are quite unreliable. Most users tended to rate SCORPIO as easier than the card catalog for everything, even when the option given was not available on SCORPIO, such as finding cross-references.

The last two questions addressed a crucial issue: whether SCORPIO could replace the card catalog for the user's present purposes. The respondents as a whole were divided 50/50, but 70% of those who had used the cards that day answered negatively. Surprisingly, only two-thirds of those using exclusively pre-1969 materials said that SCORPIO could not replace the cards. The remaining one-third may not have understood the question or the limitations of LCCC. As expected, those users interested in recent materials, legislative information, and organizational resources all supported SCORPIO as a complete replacement. The two reasons most often cited for not moving to SCORPIO were lack of periodical titles and of items cataloged before 1969, mentioned by 46% and 68% respectively of the users against replacing the cards. Other factors were the absence of various languages and formats, and the inconvenience of

waiting for terminals. These factors may all be resolved through hardware additions, intensive programming work in progress, and long-term projects such as the tapes under production by the Carrollton Press, which will furnish us with retrospective records. Difficulty in learning to use SCORPIO was the least important reason, cited by only seven people who did not want it to replace the card catalog.

5) User comments

The last page of the questionnaire invited user comments about SCORPIO and LC services overall. These remarks generally fell into the areas of instructional problems, the scope and coverage of the files, and complimentary remarks about the system. There was only one outright negative assessment of LC among the entire survey population.

Users asked for coverage of pre-1969 materials, and some mentioned the awkwardness of having to check two sources for a thorough search. Others felt the most useful thing would be to allow remote access to LOCIS from other libraries, and to tie in with other national libraries in one large data base. It is interesting to see user support for the networking activities which have been pursued nationally and internationally. Other suggestions included entering music, New Serial Titles, National Register of Microform Masters, and similar cataloging/locational publications.

Users revealed problems with instruction both directly, by asking for more documentation, and indirectly, by complaining about difficulties that could have been resolved had they asked a librarian or read existing documentation. Some users felt the flip-charts were too detailed while others felt they were not comprehensive enough.

There were many brief complimentary remarks. The staff were commended for their assistance, and people were grateful for the SCORPIO resources. One user wrote, "This is the best use of my tax money I have come across in Washington."

Problems and future plans

In the description of the survey methodology, some restrictions and compromises were outlined. Some of these could be overcome in future studies. The instrument itself was lengthy, causing respondents to skip questions or answer hurriedly. The distribution process was cumbersome, particularly the sign-in procedure. The survey was not unobtrusive, and may reflect a bias from a self-selected population. In expanding the survey to cover other terminal areas, a more efficient and less confusing technique would be needed to count the total population, draw a sample, and code questionnaires. In so doing, and by moving the survey dates closer to peak use periods, a larger sample could be drawn, the error reduced, and broader conclusions reached. However, such techniques might require greater staff time and more disruption of the user.

The lack of non-user data leaves many questions unanswered, and these data must be gathered if we are to fully understand problems with and resistance to LOCIS. Non-users could be identified and interviewed about their impressions of the computer system: are they aware of its existence and functions, what are some reasons they have not used it, and so forth.

SCORPIO does not exist in a vacuum, and usage characteristics of other components of LOCIS should be taken into account. MUMS (Multiple-Use MARC System) was initially developed for technical services but further development of its retrieval capabilities has greatly enhanced its usefulness for reference purposes. Its indexes are generally more current than those of SCORPIO and

incorporate corrections to records. It also provides access to serials, maps, in-process, and name authority records, in addition to those for books. It is used regularly by public service staff and we are now instructing patrons in its use. Future surveys might examine its use patterns as opposed to SCORPIO's, and may help our continuing work to integrate our systems. A recurring online survey might be an effective way to progressively monitor computer use, randomly generating screens of questions on designated terminals and automatically linking the user's answers with machine tallies of commands entered, file use, time of day, and so forth. Questions could be varied according to terminal location, study requirements, and systems a and the responses processed continuously, with current profiles available when needed.

Conclusions

This study was a successful first attempt at surveying SCORPIO use. The problems identified by patrons coincided with those observed by staff, and we have also been reassured on many points. Many different kinds of people use our computer catalog without great difficulty and they seem to have confidence in the system. Although the LOCIS is working well, we must direct attention to areas that can be improved, such as clarifying system messages and planning an online tutorial program. Priorities exist within LC for these elements; the Committee on Automation Planning and the Advisory Group on the Future of LC Retrieval Systems are among the mechanisms used to analyze automation needs and to facilitate library-wide input.

The LOCIS is an integral part of reference services at LC for both Congress and the public. This survey shows the overall positive response of the public and has opened other avenues for inquiry. For example, we could examine more closely the steps in the user's search process and how it is helped

or hindered by the software. It would be interesting to know how much use even experienced patrons make of sophisticated commands such as limiting and combining sets, and whether this is enough to justify the effort spent in developing these features. Controlled test populations and test data bases could facilitate more critical comparisons between different online systems and between online and card catalogs. Physical and pyschological aspects of terminal use, user expectations of online systems, and other human factors considerations will become increasingly important as we depend more on automation. Investigation into methodological improvements will benefit all of these areas. "Use of the catalog to study itself," as discussed by Phyllis Richmond (9) in relation to machine-readable catalogs, has great potential for public service as well as technical processing. As more libraries establish and evaluate similar online systems, information on their use can be synthesized to enhance planning and standards development, and to contribute to the growth of knowledge in this field.

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_____
date _____
place _____
time _____

LIBRARY OF CONGRESS

SCORPIO USER SURVEY

1979

For further information about this survey, contact Sarah Pritchard, General Reading Rooms Division, room LCB 144, or telephone [redacted]-5520

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This survey is designed to gather information about the users of our computer system (SCORPIO). By taking the time to fill it out, you will help us gain a clearer understanding of your needs and problems, and we will be better able to design services and resources to meet them. We thank you for your cooperation, and encourage you to add any comments on the back page.

n = 123

First, please let us know how accessible our computer services are:

Q1. How long did you have to wait for a terminal today? (Circle the number)

110	1	DID NOT HAVE TO WAIT
9	2	LESS THAN 5 MINUTES
1	3	5 TO 10 MINUTES
0	4	10 TO 20 MINUTES
1	5	MORE THAN 20 MINUTES

Q2. How frequently do you use the terminals? (Circle the number)

54	1	THIS IS MY FIRST USE
8	2	AT LEAST ONCE A DAY
12	3	AT LEAST ONCE A WEEK
19	4	AT LEAST ONCE A MONTH
29	5	INFREQUENTLY; ONLY A FEW TIMES EVER

Q3. How frequently do you have to wait for a terminal? (Circle the number)

48	1	THIS IS MY FIRST USE OF A TERMINAL
20	2	NEVER
49	3	SOMETIMES
2	4	OFTEN

Q4. How long did you have to wait to use a printer today? (Circle the number)

72	1	DID NOT USE A PRINTER TODAY
30	2	DID NOT HAVE TO WAIT
6	3	LESS THAN 5 MINUTES
4	4	5 TO 10 MINUTES
0	5	10 TO 20 MINUTES
5	6	MORE THAN 20 MINUTES

n = 123

Q5. How frequently do you use printers? (Circle the number)

39 1 THIS IS MY FIRST USE
27 2 NEVER ------ (If so, please skip to question #7)
23 3 SOMETIMES
14 4 OFTEN
10 5 EVERY TIME I USE SCORPIO

Q6. How frequently do you have to wait for a printer? (Circle the number)

35 1 THIS IS MY FIRST USE OF A PRINTER
8 2 NEVER
30 3 SOMETIMES
10 4 OFTEN

Q7. When others are waiting to use a terminal, what limit should LC establish on the use by any one person? (Circle the number)

8 1 15 MINUTES
44 2 30 MINUTES
1 3 45 MINUTES
4 4 NO LIMIT
7 5 HAVE AN "EXPRESS" TERMINAL, LIMIT 5 MINUTES; OTHERS WITH NO LIMIT
52 6 HAVE AN "EXPRESS" TERMINAL, LIMIT 5 MINUTES; OTHERS WITH 30 OR 45 MINUTE LIMIT
5 7 OTHER: _____

Q8. When others are waiting to use a printer, what limit should LC establish on the use by any one person? (Circle the number)

38 1 15 MINUTES
35 2 30 MINUTES
7 3 45 MINUTES
6 4 5 PAGES OF PRINTER PAPER
12 5 10 PAGES OF PRINTER PAPER
6 6 NO LIMIT
8 7 OTHER: _____

n = 123

Next, we would like to know a little bit about the way you use the Library of Congress:

Q9. How often do you come to the Library of Congress (LC) ? (Circle the number)

27	1	THIS IS MY FIRST TIME
37	2	OCCASIONALLY
29	3	SEVERAL TIMES A MONTH
26	4	SEVERAL TIMES A WEEK

Q10. At what time of day do you usually come to LC? (Circle the number)

34	1	WEEKDAYS -- EARLY MORNING
42	2	WEEKDAYS -- MID-DAY
12	3	WEEKDAYS -- LATE AFTERNOON
16	4	WEEKDAYS -- EVENING
27	5	WEEKENDS

Q11. Do you live in the Washington metropolitan area or have you come from out-of-town? (Circle the number)

82	1	LIVE IN THE WASHINGTON METROPOLITAN AREA
15	2	FROM OUT-OF-TOWN, AND MADE A SPECIAL TRIP TO USE LC
22	3	FROM OUT-OF-TOWN, BUT DID NOT MAKE A SPECIAL TRIP TO USE LC

Q12. Is your use of LC related to-- (Circle the number)

25	1	UNDERGRADUATE OR VOCATIONAL EDUCATION
24	2	POST-GRADUATE OR PROFESSIONAL EDUCATION
8	3	DUTIES AS A MEMBER OF AN ACADEMIC FACULTY
4	4	CONGRESSIONAL STAFF WORK
11	5	EMPLOYMENT IN A FEDERAL GOVERNMENT AGENCY (NON-CONGRESSIONAL)
4	6	LC STAFF WORK
16	7	WORK AS A PRIVATE RESEARCHER OR AUTHOR
15	8	OTHER PROFESSIONAL OR WORK-RELATED RESEARCH
13	9	PERSONAL, NON-WORK RESEARCH

Q13. In which subject areas are you working today?_____

_____

n=123

Q14. Are you primarily interested in materials published before or after 1969? (Circle the number)

12
46
63
1 BEFORE 1969
2 AFTER 1969
3 BOTH

Q15. How did you first hear about our computer system (SCORPIO)? (Circle the number)

80
9
32
0
4
1 SAW IT IN THE LIBRARY OF CONGRESS (LC)
2 WAS REFERRED BY A LIBRARIAN AT LC
3 FROM A FRIEND, COLLEAGUE, EMPLOYER, OR PROFESSOR
4 SAW IT MENTIONED IN A PUBLICATION (Where?_____)
5 OTHER:_____

Q16. Have you ever used another computer information retrieval system, such as MEDLINE, LEXIS, ERIC, NTIS, and others? (Circle the number)

89
33
1 NO
2 YES

Q17. How long have you been using SCORPIO? (Circle the number)

53
10
20
39
1 JUST STARTED TODAY
2 LESS THAN ONE MONTH
3 1 TO 4 MONTHS
4 MORE THAN 4 MONTHS (NOT NECESSARILY CONTINUOUSLY)

Q18. Where do you usually prefer to use terminals? (Circle the number)

29
14
4
7
4
1
44
24
2
1 COMPUTER CATALOG CENTER (REAR OF CARD CATALOG)
2 MAIN READING ROOM, OUTSIDE ALCOVES
3 MAIN READING ROOM, ON DECK 33 (THROUGH ALCOVE 6)
4 THOMAS JEFFERSON READING ROOM
5 SCIENCE READING ROOM
6 CONGRESSIONAL: READING ROOM, REFERENCE CENTERS, OR OFFICES
7 WHEREVER CONVENIENT FOR MY WORK
8 WHEREVER THERE IS A PRINTER AVAILABLE
9 OTHER:_____

n = 123

Q19. Where in the library would you like to see more terminals? (Circle all that apply)

15	1	DON'T NEED MORE TERMINALS
45	2	NEED MORE, BUT DOESN'T MATTER WHERE
25	3	MAIN READING ROOM
7	4	THOMAS JEFFERSON READING ROOM
10	5	NEWSPAPER AND CURRENT PERIODICAL READING ROOM
7	6	STACKS; WHERE?_____
13	7	OTHER: _____

Now, we would like to ask you about your experiences in learning to use the computer system (SCORPIO):

Q20. How did you first learn to use SCORPIO? (Circle the number)

65	1	FROM A LIBRARIAN AT THE COMPUTER CATALOG CENTER (AT THE REAR OF THE CARD CATALOG)
9	2	FROM A LIBRARIAN IN ANOTHER PART OF LC (WHERE?_____)
8	3	FROM A FRIEND OR ANOTHER LIBRARY USER
33	4	FROM THE FLIP-CHART BESIDE THE TERMINAL
16	5	FROM THE BRIEF CARDS OR SHEETS ON THE TERMINAL
4	6	FROM IN-HOUSE TRAINING FOR LC OR CONGRESSIONAL STAFF; SPECIFICALLY, _____
2	7	OTHER:_____

n=123

Q21. Was it easy or hard to learn to use SCORPIO? (Circle the number)

7 1 HARD
46 2 NEITHER HARD NOR EASY
70 3 EASY

Q22. Given what you now know about SCORPIO, and the use you make of it, could you benefit from additional training or written material? (Circle the number)

15 1 NO
105 2 YES

Q23. Consider the following aspects of learning to use SCORPIO. Was it easy or hard to learn how to do each?

	Was it easy or hard to learn this? (Circle your answer)		
1. decide which command to use	79 EASY	33 MEDIUM	6 HARD
2. remember the order of the commands	67 EASY	43 MEDIUM	9 HARD
3. get the form of the command right	62 EASY	48 MEDIUM	9 HARD
4. specifying the subject heading correctly ...	66 EASY	36 MEDIUM	15 HARD
5. inserting the correct spacing	84 EASY	26 MEDIUM	7 HARD
6. punctuating the commands and headings	82 EASY	36 MEDIUM	5 HARD
7. understanding the computer's messages	61 EASY	41 MEDIUM	14 HARD
8. understanding the printed instructions	62 EASY	43 MEDIUM	8 HARD
9. figuring out what to do when you have a problem	21 EASY	46 MEDIUM	50 HARD

Q24. Would the following things have made it easier for you to use SCORPIO?

	Would this have helped you? (Circle your answer)		
1. more assistance from Library staff	35 NO	35 YES	42 MAYBE
2. more complete instructions displayed by SCORPIO	21 NO	70 YES	26 MAYBE
3. group instruction in the use of SCORPIO	71 NO	16 YES	25 MAYBE
4. individual instruction by appointment	40 NO	38 YES	32 MAYBE
5. computer-assisted (on-line) instruction	13 NO	79 YES	23 MAYBE
6. more detailed manuals by the terminals	24 NO	59 YES	30 MAYBE
7. detailed instructions you could take away with you	18 NO	75 YES	22 MAYBE
8. a movie or slide-show on how to use SCORPIO ..	45 NO	39 YES	32 MAYBE

n=123

Q25. Do the following factors make it easy or hard for you to physically use the terminal?

	Factor makes it: (Circle your answer)					
1. the layout of the keys and control buttons ..	4	HARD	60	EASY	52	NO EFFECT
2. controlling the brightness of the screen	2	HARD	52	EASY	61	NO EFFECT
3. the size of the letters on the screen	3	HARD	56	EASY	56	NO EFFECT
4. the procedure for operating the printer	9	HARD	49	EASY	48	NO EFFECT
5. the procedure for setting the margins on the printer	15	HARD	26	EASY	55	NO EFFECT
6. understanding the function of some of the control keys and switches	46	HARD	26	EASY	31	NO EFFECT
7. other:_____		HARD		EASY		NO EFFECT

Q26. Would it help you to be able to reserve the facilities for the following services?

	Would you reserve for: (Circle your answer)			
1. instruction in SCORPIO or other automated systems	47	NO	52	YES
2. use of a terminal	52	NO	52	YES
3. use of a printer	46	NO	56	YES
4. discussing your search needs with a librarian who would then perform the search for you (not necessarily right away)	60	NO	45	YES

Q27. If we were unable to provide the following services free of charge, would you be willing to pay a reasonable price for them?

	Would you pay for: (Circle your answer)			
1. written instruction manuals to take with you	52	NO	55	YES
2. having searches performed and printed out by a librarian	50	NO	61	YES
3. printing at your terminal	42	NO	69	YES
4. having long lists of citations printed "off-line," that is, not during your search at the terminal, but at the central computer facility and to be picked up later	37	NO	71	YES

n=123

These last questions will discuss your approaches to searching on SCORPIO:

Q28. For what general purpose are you using SCORPIO today? (Circle all that apply)

34 1 TO PREPARE AN EXTENSIVE BIBLIOGRAPHY
34 2 TO SELECT A FEW GOOD ITEMS
65 3 TO SCAN THE AVAILABLE LITERATURE OR FACTUAL INFORMATION
18 4 TO CHECK SPECIFIC FACTUAL INFORMATION (LEGISLATIVE OR ORGANIZATIONAL)
16 5 OTHER: _____

Q29. Which of the following types of information do you expect to obtain from SCORPIO today?

	Expect to find this: (Circle your answer)	
1. what LC has by a particular author	45 NO	45 YES
2. what books LC has on a particular subject	12 NO	94 YES
3. periodical articles in current events areas	48 NO	36 YES
4. an author's name or other name	52 NO	30 YES
5. specific titles (already knowing the authors)	45 NO	36 YES
6. call numbers for specific works (when you already know the author or title)	45 NO	41 YES
7. legislative information	58 NO	25 YES
8. names of organizations	61 NO	18 YES

Q30. In your last search on SCORPIO, under which types of headings did you mainly look? (Circle all that apply)

28 1 PERSONAL NAMES
11 2 ORGANIZATION OR AGENCY NAMES
34 3 TITLES
1 4 BILL NUMBERS
11 5 LC CARD NUMBERS
85 6 SUBJECTS

If you searched by subject: Which system did you use? (Circle all that apply)

46 1 LC SUBJECT HEADINGS LIST (LARGE RED VOLUMES)
5 2 LEGISLATIVE INDEXING VOCABULARY (LIV: IN LOOSELEAF BINDER, USED FOR BIBL OR CG FILES)
10 3 LC CLASSIFICATION NUMBER
2 4 THE RETRIEVE COMMAND
62 5 BROWSE RANDOMLY UNDER A WORD YOU KNOW

n = 123

Q31. In general, is the order in which citations are displayed by SCORPIO (roughly chronological) satisfactory for your searching? (Circle the number)

8
102 1 NO
2 YES

Q32. For each of the following choices, indicate how preferable it would be to the currently used order of citations. (Circle your answer)

	How would it compare to chronological order?		
1. reverse chronological order (most recent entry first)	19 WORSE	41 SAME	39 BETTER
2. alphabetical by title	17 WORSE	57 SAME	19 BETTER
3. alphabetical by author	12 WORSE	53 SAME	27 BETTER
4. other _____	WORSE 5	SAME	2 BETTER

Q33. When you don't find information through SCORPIO, which of the following steps do you take? (Circle all that apply)

62 1 TRY A DIFFERENT SEARCH TERM ON SCORPIO
25 2 TRY A DIFFERENT DATA BASE (FILE) ON SCORPIO
35 3 ASK COMPUTER CATALOG CENTER LIBRARIAN FOR ASSISTANCE
20 4 ASK REFERENCE LIBRARIAN IN READING ROOM ABOUT OTHER SOURCES
59 5 GO TO CARD CATALOG
31 6 GO TO PRINTED INDEXES AND BIBLIOGRAPHIES
4 7 GIVE UP COMPLETELY
7 8 OTHER: _____

Q34. Did you use the card catalog in addition to SCORPIO today? (Circle the number)

57 1 NO (If no, please skip to question #34)
59 2 YES

(If yes:) What did you look under? (Circle all that apply)

29 1 AUTHOR (PERSONS OR ORGANIZATIONS)
24 2 TITLE (OF BOOKS OR PERIODICALS)
37 3 SUBJECT

n=123

Q35. For the following types of searches or problems, is SCORPIO or the card catalog easier to search? If you have another example that works noticeably better in one system than the other, you may add it at the end.

	For this search, which system is easier? (Circle your answer)							
1. searching for books (within last ten years) by subject	82	SCORPIO	5	SAME	7	CARDS	5	DON'T KNOW
2. searching by author	64	SCORPIO	10	SAME	14	CARDS	8	DON'T KNOW
3. searching by title	68	SCORPIO	10	SAME	12	CARDS	6	DON'T KNOW
4. searching by gov't agency names ...	38	SCORPIO	2	SAME	9	CARDS	37	DON'T KNOW
5. searching for items published at a certain date	39	SCORPIO	2	SAME	8	CARDS	39	DON'T KNOW
6. searching for items published in a certain language	29	SCORPIO	3	SAME	14	CARDS	42	DON'T KNOW
7. finding cross-references	40	SCORPIO	5	SAME	16	CARDS	26	DON'T KNOW
8. understanding the filing order.....	28	SCORPIO	10	SAME	17	CARDS	29	DON'T KNOW
9. understanding the difference between author/title/subject entries (on cards or in SCORPIO index)....	31	SCORPIO	23	SAME	12	CARDS	17	DON'T KNOW
10. other:_____ _____	2	SCORPIO		SAME		CARDS	2	DON'T KNOW

Q36. Could SCORPIO completely replace the card catalog for your purposes today? (Circle the number)

54 1 NO
58 2 YES (If yes, please skip to question #38)

Q37. If no, why can't SCORPIO replace the card catalog for your purposes today? (Circle all that apply)

25 1 IT LACKS PERIODICAL TITLES
9 2 IT LACKS MATERIALS IN SPECIAL FORMATS (MUSIC, MICROFORMS, MAPS, ETC.)
12 3 IT LACKS MATERIALS IN CERTAIN LANGUAGES (CHINESE, RUSSIAN, ETC.)
37 4 IT DOES NOT INCLUDE WORKS CATALOGED BEFORE 1968
14 5 IT CANNOT BE SEARCHED BY THE NAME OF A SERIES
8 6 THE COMPUTER IS "DOWN" (NOT WORKING) TOO OFTEN
14 7 THERE IS TOO OFTEN A WAIT FOR TERMINALS
7 8 IT IS TOO COMPLICATED TO LEARN TO USE QUICKLY
4 9 OTHER:_____

Q38. The Library of Congress would appreciate any other comments, suggestions, or criticisms that you have related to the SCORPIO system or other public services: